AMENDMENTS TO THE CLAIMS

Please replace all previous versions of the claims with the following listing of claims:

1-50. (Canceled).

51. (Previously presented) A multiaxis machine tool for producing workpieces having a helicoidal generated surface, comprising:

a workpiece holder for receiving a workpiece;

a tool;

activatable mechanical axes for machining the workpiece or for positioning the workpiece and the tool in relation to each other; and

a control device for activating the mechanical axes,

wherein there is provided at least one virtual axis, which can be parameterized as a guiding axis for other axes and then serves only for the synchronization of these other axes.

52. (Previously presented) The multiaxis machine tool according to claim 51, wherein at least five activatable mechanical axes are provided for the positioning of the workpiece and the tool in relation to each other.

53. (Previously presented) The multiaxis machine tool according to claim 52, wherein a grinding wheel is provided as the tool and, as mechanical axes, at least one positionable radial infeed axis (χ) is provided for the grinding wheel,

a grinding slide (ζ) which can be positioned horizontally and orthogonally in relation to the radial infeed axis is provided for the positioning of the grinding wheel in the direction of displacement of the grinding slide,

a positionable rotating axis (β) of a clamping head is provided for the rotation of the workpiece in the workpiece holder,

a positionable pivoting axis (τ) is provided for the pivoting of the workpiece and the grinding wheel with respect to each other by means of a rotation of the grinding wheel axis or its parallel projection in a vertical plane (B),

and a rotating axis (ω) is provided for the driving of the grinding wheel.

54. (Previously presented) The multiaxis machine tool according to claim 53, wherein a positionable displacing axis (δ) for the monitoring of a displacing position of the grinding wheel along the grinding wheel axis is also provided as a mechanical axis.

55. (Previously presented) The multiaxis machine tool as claimed in claim 53, wherein a pivoting axis (σ) for the pivoting of the workpiece and the grinding wheel with respect to each other by means of a rotation of the grinding wheel axis or its parallel projection in a horizontal plane (A) is also provided as a mechanical axis.

56. (Previously presented) The multiaxis machine tool according to claim 53, wherein a displacing axis (η) for the vertical displacement of the workpiece and the grinding wheel with respect to each other is also provided as a mechanical axis.

57. (Previously presented) The multiaxis machine tool according to claim 53, wherein a pivoting axis (γ) for the pivoting of the workpiece and the grinding wheel with respect to each other by means of a rotation of the workpiece axis or its parallel projection in a horizontal plane (A) is also provided as a mechanical axis.

58. (Previously presented) The multiaxis machine tool according to claim 51, wherein the virtual axis is formed by the control device by means of a freely selectable function or relation.

59. (Previously presented) The multiaxis machine tool according to claim 51, wherein the virtual axis is formed by the control device by means of a freely selectable function or relation dependent on time.

60. (Previously presented) The multiaxis machine tool according to claim 58, wherein a polynomial function serves as the freely selectable function.

61. (Previously presented) The multiaxis machine tool according to claim 58, wherein a circular relation serves as the freely selectable relation.

62. (Previously presented) The multiaxis machine tool according to claim 58, wherein a relation given by a table of values serves as the freely selectable relation.

63. (Previously presented) The multiaxis machine tool according to claim 51, wherein the activation of the respective mechanical axis by the control device takes place by means of a freely selectable function or relation.

64. (Previously presented) The multiaxis machine tool according to claim 51, wherein the activation of the respective mechanical axis by the control device takes place by means of a freely selectable function or relation which is dependent on the value of one of the virtual axes.

65. (Previously presented) The multiaxis machine tool according to claim 64, wherein the activation of the respective mechanical axis by the control device takes place by means of a freely selectable function or relation which is also dependent on the value of further parameters.

66. (Previously presented) The multiaxis machine tool according to claim 65, wherein a polynomial function which is dependent on the value of one of the virtual axes and polynomial coefficients serves as the freely selectable function.

67. (Currently amended) The multiaxis machine tool according to claim 65, wherein a circular relation which is dependent on the value of one of the virtual axes and circle constants~~, preferably~~ including a circle radius and a centre point, given by a pair of coordinates, and a direction of rotation serves as the freely selectable relation.

68. (Previously presented) The multiaxis machine tool according to claim 58, wherein the activation of the respective mechanical axis by the control device

takes place by means of a freely selectable relation which is given by a table of coordinates.

69. (Previously presented) The multiaxis machine tool according to claim 68, wherein an X coordinate, a Y coordinate and a normal angle, as viewed in end-on section, are used as coordinates of the table of coordinates.

70. (Previously presented) The multiaxis machine tool according to claim 51, wherein a memory is also provided, stored in which are machine control parameters which are accessed by the control device.

71. (Previously presented) The multiaxis machine tool according to claim 70, wherein the memory also stores a data structure which allows the parameterization of the virtual axis as a guiding axis for other axes.

72. (Previously presented) The multiaxis machine tool according to claim 70, wherein the memory also stores a data structure which also allows the parameterization of any mechanical axis as a guiding axis for other axes.

73. (Previously presented) The multiaxis machine tool according to claim 70, wherein in the memory in which machine control parameters accessed by the control device are stored there is a data structure which is intended for receiving a definition of the function or relation for the formation of the virtual axis by the control device.

74. (Previously presented) The multiaxis machine tool according to claim 70, wherein in the memory in which machine control parameters accessed by the control device are stored there is a data structure which is intended for receiving a definition of the function or relation for the activation of the respective mechanical axis by the control device.

75. (Previously presented) The multiaxis machine tool according to claim 74, wherein at least one predefined type of function or relation is provided and

the data structure has at least one data field for the identification of the predefined type of function or relation, used for the definition of a function or relation of the respective mechanical axis.

76. (Previously presented) The multiaxis machine tool according to claim 75, wherein one of the at least one predefined type of function is a polynomial function with polynomial coefficients as parameters.

77. (Previously presented) The multiaxis machine tool according to claim 76, wherein the polynomial is of the sixth degree.

78. (Previously presented) The multiaxis machine tool according to claim 74, wherein one of the at least one predefined type of relation is a circular relation with a circle radius and a centre point, given by a pair of coordinates, and a rotating direction as parameters.

79. (Previously presented) The multiaxis machine tool according to claim 74, wherein one of the at least one predefined type of function is a table of coordinates with coordinates as parameters.

80. (Previously presented) The multiaxis machine tool according to claim 79, wherein an X coordinate, a Y coordinate and a normal angle, as viewed in end-on section, are used in each case as coordinates.

81. (Previously presented) The multiaxis machine tool according to claim 74, wherein, in the memory in which machine control parameters accessed by the control device are stored, there is a data structure which is intended for receiving an identification of the workpiece flank being machined by the activation of the respective mechanical axis by the control device.

82. (Previously presented) The multiaxis machine tool according to claim 74, characterized in that in the memory in which machine control parameters accessed by the control device are stored there is a data structure which combines

at least one group of machine control parameters corresponding to a partial region of the workpiece, as a segment under a common segment identification.

83. (Previously presented) The multiaxis machine tool according to claim 82, wherein the common segment identification is a segment number.

84. (Previously presented) The multiaxis machine tool according to claim 82, characterized in that such a group of machine control parameters for which the same axis is parameterized as the guiding axis are always combined as a segment.

85. (Previously presented) The multiaxis machine tool according to claim 51, further having a memory and means for reading into the memory machine control parameters for the control device from a data carrier or electronic carrier signal, the data carrier or carrier signal having at least one data structure which has a data field which allows the parameterization of the virtual axis as a guiding axis for other axes, and the data carrier or carrier signal activating the machine tool during the reading-in or after the reading-in by means of this data structure.

86. (Previously presented) The multiaxis machine tool according to claim 51, wherein the

control device is an open-loop control device.

87. (Previously presented) The multiaxis machine tool according to claim 51, wherein the

control device is a closed-loop control device.

88. (Previously presented) A method of activating a multiaxis machine tool for producing workpieces having a helicoidal generated surface, having a workpiece holder for receiving a workpiece, a tool, activatable mechanical axes for machining the workpiece or for positioning the workpiece and the tool in relation to each other, and also a control device for activating axes, comprising:

providing a virtual axis;

parameterizing the virtual axis as a guiding axis for the mechanical axes; and

synchronizing the mechanical axes in their positioning, during the operation of the machine for machining the workpiece, with the aid of the virtual axis.

89. (Previously presented) A method of generating machine control parameters for producing workpieces having a helicoidal generated surface ~~for~~ with a multiaxis machine tool having a workpiece holder for receiving a workpiece, a tool, activatable mechanical axes for machining the workpiece or for positioning the workpiece and the tool in relation to each other, and also a control device for activating axes, a memory, and means for reading machine control parameters for a control device from at least one data carrier or electronic carrier signal, wherein the at least one data carrier or electronic carrier signal is generated with machine control parameters, the method comprising:

generating, on the at least one data carrier or electronic carrier signal, at least one data structure which has a data field which allows parameterization of a virtual axis as a guiding axis for activating the mechanical axes; and

introducing the at least one data carrier or electronic carrier signal into the machine tool for reading of the data carrier by the machine tool and for configuration of the machine tool according to the data structure.

90. (Previously presented) The method according to claim 88, wherein the control device is an open-loop control device.

91. (Previously presented) The method according to claim 89, wherein the control device is a closed-loop control device.